



Review of *Psorodonotus Specularis* Group (Orthoptera, Tettigoniidae, Tettigoniinae): two new species from North-east Anatolia

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Abstract

The Anatolio-Caucasio-Balkan genus *Psorodonotus* (Orthoptera, Tettigoniidae) presently includes 13 species belonging to three species groups. In the present study we review the **Specularis group** and describe two new species—*P. rize* Kaya & Ciplak **sp. n.** and *P. giresun* Kaya & Ciplak **sp. n.**. Data obtained of 21 different populations from the North-eastern Anatolia and the Caucasus are used for descriptive and analytical purposes. Morphology of this group has been studied both qualitatively and quantitatively using linear metric data of the hind femur and geometric data of male and female pronotum, male cerci and ovipositor. Male calling songs are described and statistically analysed. Qualitative and/or quantitative morphology and male calling song suggested seven taxonomic units: *P. specularis specularis*, *P. specularis inermis*, *P. inflatus*, *P. davisii*, *P. soganli*, *P. rize sp. n.*, *P. giresun sp. n.*. Our results suggest closest relationships of *P. rize sp. n.* with *P. davisii* and of *P. giresun sp. n.* with *P. soganli*.

Key word: *Psorodonotus*, *Specularis* Group, *Psorodonotus rize sp. n.*, *Psorodonotus giresun sp. n.*, Anatolia, Caucasus, Geometric morphometry

Introduction

Kaltenbach (1971) suggested Anatolia as one of the radiation centres for Tettigoniinae (previously Decticinae). Çıplak (2003) reviewed Tettigoniinae of Anatolia and reported that more than eighty percent of the species is endemic to Anatolia though range of some species extends to its close surrounding (named as semi-endemics). Consistent with this rate of endemism there are several genera endemic to Anatolia or predominantly range in this area (Çıplak 2003). This high rate of endemism of Anatolian Tettigoniinae is a result both of radiation of native ancestral stocks or colonisation from neighbouring areas (Çıplak 2008). Genus *Psorodonotus* (Orthoptera, Tettigoniidae) possibly originated from an ancestral stock in Anatolia or its adjoining areas (Çıplak 2008). However, proposing precise statements about radiation of the group requires documentation of its diversity.

Genus *Psorodonotus* presently includes 13 species (Eades *et al.* 2014) classified under three species groups established on the basis of morphology (Kaya *et al.* 2013): **Caucasicus Group**, **Venosus Group** and **Specularis Group**. The last group differs from the other two by several features, especially by the non—or poorly rugose pronotal disc, longer tegmina and longer hind femur. For this reason Tarbinsky (1932) established a separate genus as *Semenovites* (to include only *Peltastes specularis*) which has later been synonymised with *Psorodonotus* (Ramme 1951). There are three species related to *P. specularis*—*Psorodonotus inflatus* (Uvarov 1912), *Psorodonotus davisii* (Karabağ 1956) and *Psorodonotus soganli* (Ünal 2013). Later these four species have been considered constituting the **Specularis Group** on account of unique morphological characters (Kaya *et al.* 2013). Members of the **Specularis Group** ranged from the Great Caucasus in the north to the North-east corner of Turkey in the south mainly along the euxinic vegetation belt of the Black Sea Basin. As we observed that they demand specific habitats we estimated that heterogeneous topography of the area may produce barriers (Kaya *et al.* 2013;

sister species by (1) the smaller number of stridulatory pegs, (2) the song phrase consisting of two-three elements, (3) the shorter duration of the song phrase and (4) the small incision of female subgenital plate. Our unpublished molecular data suggest that there is no gene exchange between these two species and they shared a common ancestor about two million years ago.

Etymology. Named after its type locality belonging to the Giresun Province of Turkey.

Description. Male (holotype). Medium sized for the genus and for the species group.

Thorax. Pronotum (Fig. 12) long, at least one and a half the length of fore tibia and gradually widened backward in metazona. Disc of pronotum flattened, depressed in the middle, with rounded lateral margins and widely rounded hind margin, smooth and shiny in prozona and weakly tuberculate in metazona. Paranota smooth and shiny. Tegmina reach to the end of the sixth abdominal tergite and are covered by pronotum up to their one-fourth (Fig. 40). The stridulatory peg number varies between 86 and 116 (mean 99). Hind femur extends beyond the tip of abdomen.

Abdomen. Cercus length (Fig. 69) moderate for both the genus and the species group; with a short, robust, basally widened tooth located close to the base. Anal tergite (Fig. 55) transverse, with a truncate hind margin. Subgenital plate wide in the base and weakly tapering distally in its apical third, with a very shallow triangular incision and wide apical lobes; the length of styli is about one-third of the medial length of subgenital plate. Titillators (Fig. 97) are weak, with narrow and smooth basal arms and narrow spinose apical arms; spinules of apical arms ordered in a single row dorsally.

Colouration. General colouration blackish brown. Vertex of head and disk of pronotum light brown or yellowish brown. Paranota blackish brown. Tegmina brown with yellow veins. Hind femur and tibia blackish brown, Abdomen pale blackish brown. Cerci dirty brown.

Female. Pronotum similar to that of male (Fig. 26), tubercles in metazona are relatively prominent when compared to male. Tegmina fully covered by pronotum, reduced to scale-like appendages hardly overlapping dorsally. Subgenital (Fig. 125) plate short, transverse, with a small incision and triangular lobes at hind margin. Ovipositor (Fig. 111) slender, long, roughly 3 times of the pronotum length.

Colouration. As in male.

Distribution. The new species occurs in the alpine zone of the North-east Kaçkar Range in the Rize Province of Turkey (Fig. 1).

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